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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,083	01/14/2004	Kensuke Sawada	FUJI 20.849	3461

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EXAMINER

FOTAKIS, ARISTOCRATIS

ART UNIT	PAPER NUMBER
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2611

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/757,083	SAWADA, KENSUKE	
	Examiner	Art Unit	
	Aristocratis Fotakis	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 5, 7 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/08/2004, 10/01/2006</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being obvious over Oishi et al. (US 6,009,090).

Re claim 1, Oishi teaches of a digital baseband modulation apparatus, comprising: a spread modulation part (code-multiplexed signal generator) for complex spreading an I component signal (D_{in} , Fig.2, n is the number of channels) and a Q

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component signal (D_{qn} , Fig.2) of a transmit signal by using spreading code for I axis (C_{in} , Fig.2) and spreading code for Q axis (C_{qn} , Fig.2) so as to output an output signal comprising an output I component signal (output to 81i) and an output Q component signal (output to 81q) (Col 7, Lines 64 – 67 to Col 8, Lines 1 – 36, Fig.2); and an amplitude conversion part (signal peak suppression unit, Fig.2) for decreasing the amplitude component of the output signal by a damping factor α when the output signal is output on the I axis or on the Q axis (Col 8, Lines 37 – 67 to Col 9, Lines 1 - 24, Fig.2 - 4). However, Oishi does not specifically teach of the factor being a constant of 0.5.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have given a value of 0.5 to the damping factor to decrease the output by half on either the I-axis or Q-axis, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Claim 2 is rejected under 35 U.S.C. 103(a) as being obvious over Oishi in view of Nagatani et al.(US 6,097,714).

Oishi teaches all the limitations of claim 1 as discussed above except of the use of a phase rotator.

Nagatani teaches of a code multiplexing transmitting apparatus spread-spectrum that modulates transmission data of a plurality of channels by spreading codes that differ from one another, combining the spread-spectrum signals of each of

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the channels and transmitting the resultant spread-spectrum modulated signal. A spread-spectrum modulating unit for each channel includes a phase shifter for shifting, by a predetermined angle channel by channel, the phase of a position vector of the spread-spectrum modulated signal of each channel. As the result of such phase control, the phases of pilot signal portions of the spread-spectrum modulated signals of the respective channels are shifted relative to one another so that the peak values of the code-multiplexed signal can be suppressed (Abstract, Fig.1 and 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used a phase rotator to suppress the peak values of the code-multiplexed signal, reduce the power of interference waves and raise the power efficiency of the transmitting power amplifier 9Col 9, Lines 10 – 16).

Claims 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oishi in view of Yanagi (6,625,173) and further in view of Kubota (US 6,603,777).

Re claim 5, Oishi teaches of a digital baseband modulation apparatus, comprising a plurality of pairs of a spread modulation part (Code-multiplexed signal generator, 71₁ – 71_n, Fig.2) and an amplitude conversion part (signal-peak suppression unit, Fig.2), each pair receiving a transmit signal (Fig.2, D₁ – D_n), wherein the spread modulation part complex spreads an I component signal (D_{i1}-D_{in}, Fig.2) and a Q component signal (D_{q1}-D_{qn}, Fig.2) of the transmit signal by using spreading code for I

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axis (C_{i1} - C_{in} , Fig.2) and spreading code for Q axis (C_{q1} - C_{qn} , Fig.2) so as to output an output signal comprising an output I component signal (output to 81_i) and an output Q component signal (output to 81_q) (Col 7, Lines 64 – 67 to Col 8, Lines 1 – 36, Fig.2); and the amplitude conversion part decreases the amplitude component of the output signal by a damping factor α when the output signal is output on the I axis or on the Q axis (Col 8, Lines 37 – 67 to Col 9, Lines 1 - 24, Fig.2 - 4); the digital baseband modulation apparatus further comprising: a duplexing part (#55, quadrature modulator, Fig.2) for duplexing output signals output from the amplitude conversion parts (#52, Fig.2) by linearly adding the output signals.

However, Oishi does not teach of a separation part for separating a received high speed channel signal into a plurality of separated signals to be input into the spread modulation parts and a switch part for switching between the separated signals and received low speed channel signals.

Yanagi teaches of a base station transmitter for CDMA system and a serial signal transmitting method (title of invention). The conventional CDMA base station transmitter (Fig. 1) spreads respective transmission signals for n communication channels #1 to # n with different spread codes, and then combines the respective signals into a combined spread signal which is then transmitted to receivers. The CDMA base station transmitter uses orthogonal modulation as a primary modulation before the spread modulation. Each transmission signal can be divided into an in-phase component I and a quadrature component Q. The CDMA base station transmitter has channel signal processing units (21₁ to 21 _{n}) provided for respective communication channels, spread code generator

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(#12) for generating spread codes for respective communication channels, spreading and combining unit (#83) for performing spread modulation and combination (Col 2, Lines 17 – 32). The channel signal processing units (Fig.2) comprise of a switch part (parallel/serial converter) for switching between the transmission signals ($103_1 - 103_n$) and received signals (amplitude corrected control signals, $102_1 - 102_n$, Fig.2) to input either signals into the spread modulation parts. However, Yanagi does not teach of separating a high speed to a plurality of low speed signals.

Kubota teaches of a method and apparatus for establishing frame synchronization in a transmission system (title of invention). A separation part (S/P, #2, Fig.1) for separating a received high speed channel signal (DATA, Fig.1) into a plurality of separated signals (low speed) to be input into the frame synchronous circuit (#1, Fig.1) (Col 5, lines 18 – 23).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used a high speed to low speed S/P converter to convert the transmission signal into a plurality of low speed signals for the benefit of an improved error rate performance. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used a switch part switching between the separated low speed parallel signals and the received low speed in order to generate a plurality of serial signals as input to the S/P converters (#61, Fig.2) of Oishi to generate the inphase and quadrature signals.

Claims 3 - 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oishi et al. (US 6,009,090) in view of Chouly (US 5,504,775).

Oishi teaches of a CDMA transmitting apparatus in claims 1 and 2 that comprises of a spread modulation part, an amplitude conversion part and a phase rotation part. However, Oishi does not teach of a receiver that performs the reverse procedure of the signal being transmitted.

Chouly teaches of a multi-user spread spectrum transmitter where the receiver performs the reverse operations to those performed at the transmitter end (Col 4, Lines 64 – 65).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used a CDMA receiver that would perform the transmitting process in a reverse order to reproduce the signal for simplicity reasons.

Claims 7 - 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oishi et al. (US 6,009,090) in view of Yanagi (6,625,173) and Kubota (US 6,603,777) and in further view of Chouly (US 5,504,775).

Oishi, Yanagi and Kubota teach of a CDMA transmitting apparatus in claims 5 and 6 that comprises of a spread modulation part, an amplitude conversion part and a phase rotation part. However, Oishi does not teach of a receiver that performs the reverse procedure of the signal being transmitted.

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Chouly teaches of a multi-user spread spectrum transmitter where the receiver performs the reverse operations to those performed at the transmitter end (Col 4, Lines 64 – 65).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used a CDMA receiver that would perform the transmitting process in a reverse order to reproduce the signal for simplicity reasons.

Allowable Subject Matter

Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aristocratis Fotakis whose telephone number is (571) 270-1206. The examiner can normally be reached on Monday - Thursday 7 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

AF

Adelstein


CHIEH M. FAN
SUPERVISORY PATENT EXAMINER